



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/940,020	09/29/1997	HIDEAKI FUKUZAWA	04173.0348	4500

7590 02/03/2004

FINNEGAN HENDERSON FARABOW GARRETT
& DUNNER
1300 I STREET NW
WASHINGTON, DC 200053315

EXAMINER

DAVIS, DAVID DONALD

ART UNIT	PAPER NUMBER
----------	--------------

2652

26

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/940,020

Applicant(s)

FUKUZAWA ET AL.

Examiner

David D. Davis

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-23, 26, 47, 48, 61-65, 67-75, 77 and 78 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-23, 26, 47, 48, 61-65, 67-75, 77 and 78 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 25. 6) ☐ Other: _____

DETAILED ACTION

1. In view of the decision handed down by the Board of Appeals on April 18, 2003, the finality of the rejection of the last Office action is withdrawn.

Information Disclosure Statement

2. Receipt is acknowledged of the Information Disclosure Statement (IDS) received November 4, 2003.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 21-23, 26, 47, 61-65, 68 and 69 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's Admitted Prior Art (as shown in figure 36 and described in pages 1-16). Applicant's Admitted Prior Art (hereinafter: AAPA) shows in figure 36 a magnetoresistive effect device including a substrate having a main surface; a magneoresistance effect film formed on the main surface of the substrate and having a magnetic field detecting portion 1.

Also shown in figure 36 is a pair of bias magnetic field applying films 2 disposed adjacent to and abutted against both edge portions of the magnetic field detecting portion 1. The bias magnetic field applying films having hard magnetic films Co as a structural element, as described in page 2, lines 14-18 of AAPA, and having a bicrystal structure, as described in the

Art Unit: 2652

paragraph bridging page 7 and 8. The paragraph bridging pages 7 and 8 also discloses that the hard magnetic film 2 containing Co as a structural element has Co(110) oriented perpendicular to the surface. Page 2, lines 14-18 of AAPA also discloses that hard magnetic film 2 is composed of CoPt.

Figure 36 of AAPA shows lower shield layer 6 with a magnetoresistance effect device formed on layer 6 through lower reproduction magnetic gap 4. Figures 36 of AAPA also shows upper magnetic shield layer 7 form on upper reproduction magnetic gap 5.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2652

7. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (as shown in figure 36 and described in pages 1-16) in view of Romankiw (US 3,908,194). Applicant's Admitted Prior Art (AAPA) discloses the claimed invention see section 4, supra. However, AAPA is silent as to the a magnetic recording/reproducing head.

Romankiw shows in figure 9, for example, a reproducing head and a recording head. The recording head has a lower magnetic pole 224 in common with the lower magnetic shield layer 224 of the magnetic head. Record magnetic gap is formed on lower magnetic pole 224. Upper magnetic pole 241 is formed on the record magnetic gap. Figure 9 also shows record coil 228 for supplying a record magnetic field to the lower magnetic pole 224 and the upper magnetic pole 241.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the reproducing magnetoresistive device of AAPA with a reproducing head to form a merged or combined head as taught by Romankiw. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a reproducing head with a recording head to form a merged or combined head so as to provide "a head which permits reading the material just written in a single package when the write head precedes the read head." See column 2, lines 12-14 of Romankiw.

8. Claims 67, 70-75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (as shown in figure 36 and described in pages 1-16) in view of Kogure et al (JP 02-276109). Applicant's Admitted Prior Art (hereinafter: AAPA) shows in figure 36 a magnetoresistive effect device including a substrate having a main surface; a

Art Unit: 2652

magneoresistance effect film formed on the main surface of the substrate and having a magnetic field detecting portion 1.

Also shown in figure 36 is a pair of bias magnetic field applying films 2 disposed adjacent to and abutted against both edge portions of the magnetic field detecting portion 1. The bias magnetic field applying films having hard magnetic films Co as a structural element, as described in page 2, lines 14-18 of AAPA, and having a bicrystal structure, as described in the paragraph bridging page 7 and 8. The paragraph bridging pages 7 and 8 also discloses that the hard magnetic film 2 containing Co as a structural element has Co(110) oriented perpendicular to the surface. Page 2, lines 14-18 of AAPA also discloses that hard magnetic film 2 is composed of CoPt.

Figure 36 of AAPA shows lower shield layer 6 with a magnetoresistance effect device formed on layer 6 through lower reproduction magnetic gap 4. Figures 36 of AAPA also shows upper magnetic shield layer 7 form on upper reproduction magnetic gap 5.

AAPA, however, is silent as to an amorphous and metal crystal underlayer. Kogure et al shows in figure 1 an amorphous and metal crystal, which is Cr, underlayer. The underlayer has a thickness of 5 to 50 nm. *Note: Since the boundaries of the thickness have not been set forth in the claims and Kogure et al has at least one layer between 5 to 50 nm and the claims require an underlayer comprising (which is synonymous with including, which is defined as "To have or take in as a part or member"), the underlayer of Kogure et al has a thickness of 5 to 50 nm.*

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the device of AAPA with an amorphous and metal crystal

Art Unit: 2652

underlayer as taught by Kogure et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a device with an amorphous and metal crystal underlayer to "improve the crystallinity of a magnetic layer".

9. Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (as shown in figure 36 and described in pages 1-16) in view of Kogure et al (JP 02-276109) and in further view of Romankiw (US 3,908,194). Applicant's Admitted Prior Art (AAPA) as modified by Kogure et al discloses the claimed invention see section 4, supra. However, AAPA is silent as to the a magnetic recording/reproducing head.

Romankiw shows in figure 9, for example, a reproducing head and a recording head. The recording head has a lower magnetic pole 224 in common with the lower magnetic shield layer 224 of the magnetic head. Record magnetic gap is formed on lower magnetic pole 224. Upper magnetic pole 241 is formed on the record magnetic gap. Figure 9 also shows record coil 228 for supplying a record magnetic field to the lower magnetic pole 224 and the upper magnetic pole 241.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the reproducing magnetoresistive device of AAPA as modified by Kogure et al with a reproducing head to form a merged or combined head as taught by Romankiw. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a reproducing head with a recording head to form a merged or combined head so as to provide "a head which permits reading the material

Art Unit: 2652

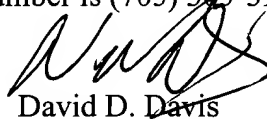
just written in a single package when the write head precedes the read head.” See column 2, lines 12-14 of Romankiw.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Monday thru Friday between 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



David D. Davis
Primary Examiner
Art Unit 2652

ddd